CASE STUDIES

CLIMATE ADAPTIVE PRACTICES GRASSROOTS INITIATIVES

Development Alternatives

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Population	As per 2011 census, Uttarakhand has a population of 10,116,752, and Ranks 20th in India in terms of population.[1]
Climate	The state has five seasons: winter, summer, spring, autumn, and a monsoon season.
Climate Vulnerabilities	Changing weather patterns and rising temperatures, flash floods, increase intensity of extreme rain fall, recession of glaciers, extreme rain events, landslides, cloudbursts.
Average Annual Rainfall	1645.6 millimetre[2]
Economy	Economy of the state is mainly based on agriculture and livestock.

[1] *2011 Census of India.*

[2] *District-wise monthly rainfall data from 2004-2010 for the whole of India by Indian Meteorological department from www.indiaportal.org*

Uttarakhand is a state in the northern part of India. It is often referred to as the Devbhumi due to the many Hindu temples and pilgrimage centres found throughout the state. Uttarakhand is most vulnerable to climate-mediated risks. Mountainous regions are vulnerable to climate change and have shown "above average warming" in the 20th century. The livelihoods of communities are almost primarily based on natural resources - water, forest, agriculture, etc. About three-fourth of state's population is rural and virtually everyone depends on agriculture. Climate change will have direct impacts on livelihoods as most of the economic and livelihood sectors are vulnerable to the impacts of climate change[1].

[1] *www.indiaenvironmentportal.org.in/files/file/uttarakhand%20state%20action%20plan%20on%20climate%20change%202012_0.pdf*

Guarding Nature

Key Messages

- *Van Panchayats* (Community based institutions) are key institutions to manage forest/natural resources efficiently to build a sense of ownership and social authority over their natural resources.
- Regeneration of forests provides co-benefits for environment, climate and livelihood security.

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1. Context

1.1 Need:

Climate change could cause irreversible damage to forest ecosystems. Moreover, there has been an increasing extraction from forests, largely due to increase in population and thus, increase in per person requirement. The rate of use of natural resources has been more than the rate of replenishment; as visible clearly in case of trees. To tackle this issue of deforestation; pine trees were grown which have exacerbated the problem due to their harmful impact on environment. Communities living in the Himalayan region are dependent on forest for their fuel and fodder requirement. The village communities in Uttarakhand comprising small land holders depend critically on community forests for their subsistence living. However, loss of forests is impacting livelihoods of these marginal communities.

In this scenario, it becomes a difficult challenge to sustain the existing resources; as well as improve community's access to natural resources to fulfill their basic needs. For maintaining this balance Van Panchayats came into existence in 1930s in India to work from a participatory approach for management of forest resources, but due to lack of active leadership these Van Panchayats were unable to function effectively.

1.2 Response:

Chirag, a not-for profit organisation is working in Central Himalayan region since 1986, with a mission to improve lives of rural people in this region. Chirag has been working with interventions on health, education and natural resource management. It is presently working in 174 villages across 7 blocks in 3 Districts – Nainital, Bageshwar and Almora.

Chirag studied and designed a systemised response to the challenges through strengthening of *Van Panchayats*; to support communities for natural resource management. It includes capacity building of *Van Panchayats* on their rights and responsibilities, and also various models which they adopt for managing their forests. Chirag also supports *Van Panchayats* with scientific data, related to forests and spring recharge.

"*Van Panchayats* (Community based institutions) are key institutions for managing forest/natural resources efficiently building a sense of ownership and social authority over their natural resources"

2. Objectives

The key objective of Chirag's programme on natural resource management is to build capacities of local *Van Panchayat* bodies for effective management of resources like springs, forests and fodder with involvement of other community members. The emphasis of their work is on the following three aspects to:

- Increase access to leaf litter, fodder and fuel wood production through plantation on common and private lands.
- Increase the number of months, when green fodder is available for livestock, which are important sources of income for communities.
- Build a scientific understanding about the process of spring recharge mechanisms in hills among village level institutions to enable them in spring recharge management.

3. Approach

To achieve the above mentioned objectives, Chirag follows the approach of strengthening community based institutions like Van Panchayats, building their capacities to help build their systems and manage resources more efficiently.

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Demarcated Forest area of Van Panchayats

4. Key Components and Key Stakeholders

The key components of Chirag's interventions on natural resource management are:

- Introducing new varieties of fodder grasses: Through community extension workers, Chirag has introduced new fodder grasses, which would remain green for longer periods and regenerate faster. This is to improve availability of green fodder for livestock owned by rural families. Also fodder plantation is done along the contour trenches and on terraces, which encourages growth of rootstock, enabling soil moisture levels to go up and ensuring the survival of sapling broad-leaf trees.

  The fodder programme has been implemented across 38 villages and has

included setting up of nurseries; for root stock production (63 Quintals), plantation of fodder grass (1000 Quintals) - this has been achieved on both, private and *Van Panchayat* land. The fodder grass production; resulting from the above (5000 Quintals) has benefited close to 900 households.

- Forest management for fuel, fodder and leaf litter: Chirag organises regular training sessions with selected Van Panchayats. With the support from Chirag, *Van Panchayats* have developed mechanisms for appropriate utilisation of forest resources without depleting the forests completely. The system includes rules for entering the forests. The forest area under each Tok (a sub-area of village) is demarcated with wires and is open for general community members, for only two months in a year. This gives time for forest replenishment throughout the year and also maintains the level of extraction. Some other rules like one bundle of fodder grass per person also help in maintaining the ecological balance in the region. The long term sustainability of a community's forest depends on how the community maintains and protects it. Community people in a village Budibana in Kasiyalekh block, have reported a major change in their forest area in past 8 years.
- Forestry and plantation: Two major aspects of this activity have been plantation of approximately 96,244 saplings across 51 villages, covering approximately 155 Hectares of *Van Panchayat* land. This activity has been augmented by support for protection and maintenance work; which has included supporting *Van Panchayats* in appointment of forest guards and also in construction/repair of approximately 5000 Running Metres of fencing, both wire and wall. Additionally a fire line of approximately, 3000 metres has also been made with the support of *Van Panchayats*. As part of soil conservation measures, Chirag has worked in 51 villages, covering approximately 155 Hectares in construction of approximately 76252 running metres of contour terraces and also khaals, gabion check dams, gully plugs and approximately 166 Cubic Metres of percolation pits for water conservation.
- Scientific assistance in improving forestry efforts of *Van Panchayats*: Chirag has specified quadrate plots (10 m X 10 m) inside the forests to monitor the growth and survival rate of different species of fodder and trees. GPS mapping of forest area is also done to track physical growth and changes. All these systems provide data and information for continuous refining of plantation strategies and to account for local variations in geography and climatic conditions.
- Spring recharge: Chirag has worked to collect spring recharge data from about 46 springs and conducted treatment activity on them. It also worked with Jal Samitis at village level, to make them understand geographical system of spring recharge and how they can recharge their springs. Apart from this a detailed study and treatment of 70 other springs across 33 villages is being done.

5. Outcomes and Impacts

This approach of natural resource management has shown visible impacts in the forest area of the intervention area. Some of the clear outcomes of Chirag's long term intervention are -

i. Increased beneficial varieties of trees and plants in forest areas under intervention: There has been a remarkable increase in number of oak trees in place of pine trees, which has a large impact on overall ecological system. Pine trees degrade the quality of soil by making it acidic, they are more prone to forest fires, do not produce fodder and are not considered good by community members. Pine being a dominating species also does not allow other vegetation to flourish. Therefore, replacing pine with oaks in forests is a major achievement for communities.

ii. Increased spring water levels: With scientific data and detailed studies Jal Samitis were better able to understand; how to utilise their funds and efforts in the right direction for spring recharge. They worked on well-identified geographical regions and developed catchment areas. This has resulted in form of rejuvenation of springs which were once dried up. There are almost 30 springs which were recharged through this method.

iii. Reduced work load on women for gathering fuel, fodder and water as they do not require traveling long distances now.

iv. Increased awareness and understanding among community members about environmental changes take place around them. The village members are well aware of the various changes in hill temperature, plantation varieties and the need and importance to conserve our natural resources. The community members have a very clear understanding of the relationship between forests, rains and natural disasters and their impact on human existence.

6. Lessons Learnt

- Active participation and ownership in the process of forest management and conservation has shown a pathway for community based processes, which can be built effectively for sustaining development interventions. Such an intervention demonstrates a very important lesson to work on community driven natural resource management; that it is a gradual and relatively longer process.
- If community institutions like *Van Panchayats* or *Jal Samitis* are strengthened and motivated to lead; the impact derived is more sustainable. Communities continue to exist in generations and once the communities are themselves involved in their management; the development efforts get engrained within their system.
- The model can be replicated, not only in similar areas in Himalayan region, but also other regions.